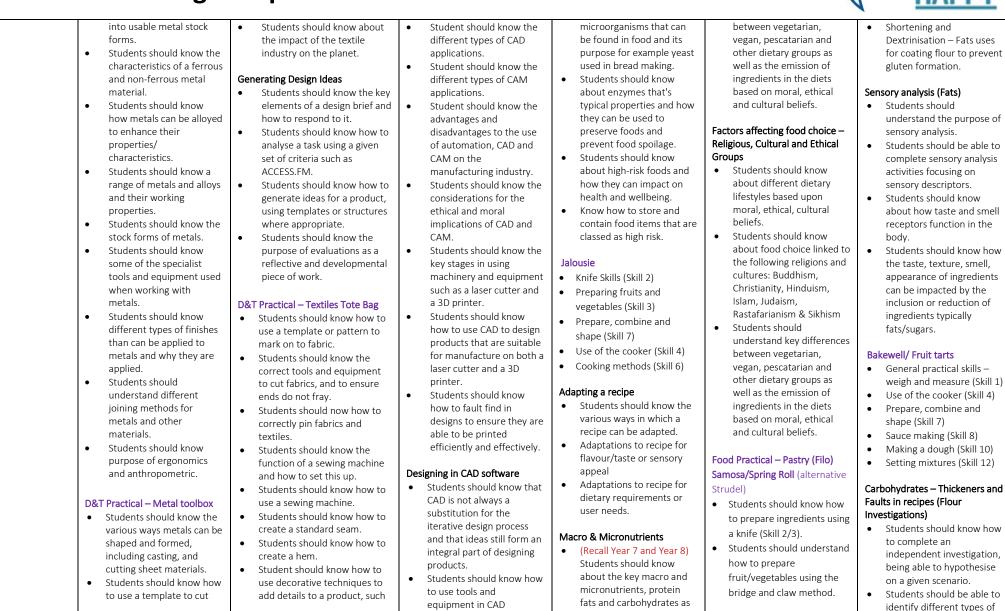# Curriculum Knowledge Map

SUCCESSFUL CREATIVE HAPPY

CHS Computing and Technology 2023/2024
Design and Technology & Food Preparation and Nutrition

Key stage 3: Rotation model

	Design and Technology	Food Preparation and Nutrition	Computing
Year 7	2 hours per week 10 weeks	2 hours per week 10 weeks	2 hours per week 20 weeks
Year 8	2 hours per week 10 weeks	2 hours per week 10 weeks	2 hours per week 20 weeks
Year 9	2 hours per week 20 weeks rotation	2 hours per week 20 weeks rotation	1 hour per week 40 weeks

Year 9	Rotation					
	Metals and Alloys Textiles CAD/CAM and Future Technologies			Food Nutrition and Health Food culture, Ethics and the Environment Food preparation skills		
	Weeks 1 - 5	Weeks 6 - 13	Weeks 14 - 20	Weeks 1 - 5	Weeks 6 - 13	Weeks 14 - 20
Declarative *What should they know?*	Metals and Alloys • Students should know how to identify the origins of metals as a material (from ore). • Students should know how metals are extracted and the environmental impact that can have on the environment. • Students should understand the process of refining metals from ore	Textiles • Students should know about the Sources and origins of a range of textiles. • Students should know about Natural and synthetic fibres. • Students should know about How textiles are made. • Students should know about the weaving process for woven fabrics. • Students should know about the Knitting process for knitted fabrics.	CAD/CAM – Computer Aided Design, Computer Aided Manufacture • Students should know how the development of technology has led to the use of Automation in factories for manufacture. • Students should know the terminology CAD and CAM (Computer Aided Design, Computer Aided Manufacture) and how it is used by both designers and manufacturers.	The Food Industry • Students should know about the key careers in the food industry. • Students should know about the different skills, qualities, attributes, and qualifications required to pursue a career in the food industry. Microorganisms and Enzymes • Students should know about the main types of	Factors affecting food choice - Dietary Groups • Students should know about different dietary lifestyles based upon moral, ethical, cultural beliefs. • Students should know about different tolerances and intolerances of food and its impact on diet and lifestyle. • Students should understand key differences	Fats (hidden and Visible) • Students should know about the function of fats in the diets as well as the deficiencies and access of facts. • Students should understand that fats can be both hidden and visible in ingredients and should understand the differences between these different food groups.

into usable metal stock forms.
- Students should know the characteristics of a ferrous and non-ferrous metal material.
- Students should know how metals can be alloyed to enhance their properties/ characteristics.
- Students should know a range of metals and alloys and their working properties.
- Students should know the stock forms of metals.
- Students should know some of the specialist tools and equipment used when working with metals.
- Students should know different types of finishes than can be applied to metals and why they are applied.
- Students should understand different joining methods for metals and other materials.
- Students should know purpose of ergonomics and anthropometric.

D&T Practical – Metal toolbox
- Students should know the various ways metals can be shaped and formed, including casting, and cutting sheet materials.
- Students should know how to use a template to cut

- Students should know about the impact of the textile industry on the planet.

Generating Design Ideas
- Students should know the key elements of a design brief and how to respond to it.
- Students should know how to analyse a task using a given set of criteria such as ACCESS.FM.
- Students should know how to generate ideas for a product, using templates or structures where appropriate.
- Students should know the purpose of evaluations as a reflective and developmental piece of work.

D&T Practical – Textiles Tote Bag
- Students should know how to use a template or pattern to mark on to fabric.
- Students should know the correct tools and equipment to cut fabrics, and to ensure ends do not fray.
- Students should now how to correctly pin fabrics and textiles.
- Students should know the function of a sewing machine and how to set this up.
- Students should know how to use a sewing machine.
- Students should know how to create a standard seam.
- Students should know how to create a hem.
- Student should know how to use decorative techniques to add details to a product, such

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- Student should know the different types of CAD applications.
- Students should know the different types of CAM applications.
- Student should know the advantages and disadvantages to the use of automation, CAD and CAM on the manufacturing industry.
- Students should know the considerations for the ethical and moral implications of CAD and CAM.
- Students should know the key stages in using machinery and equipment such as a laser cutter and a 3D printer.
- Students should know how to use CAD to design products that are suitable for manufacture on both a laser cutter and a 3D printer.
- Students should know how to fault find in designs to ensure they are able to be printed efficiently and effectively.

Designing in CAD software
- Students should know that CAD is not always a substitution for the iterative design process and that ideas still form an integral part of designing products.
- Students should know how to use tools and equipment in CAD

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microorganisms that can be found in food and its purpose for example yeast used in bread making.
- Students should know about enzymes that's typical properties and how they can be used to preserve foods and prevent food spoilage.
- Students should know about high-risk foods and how they can impact on health and wellbeing.
- Know how to store and contain food items that are classed as high risk.

Jalousie
- Knife Skills (Skill 2)
- Preparing fruits and vegetables (Skill 3)
- Prepare, combine and shape (Skill 7)
- Use of the cooker (Skill 4)
- Cooking methods (Skill 6)

Adapting a recipe
- Students should know the various ways in which a recipe can be adapted.
- Adaptations to recipe for flavour/taste or sensory appeal
- Adaptations to recipe for dietary requirements or user needs.

Macro & Micronutrients
- (Recall Year 7 and Year 8) Students should know about the key macro and micronutrients, protein fats and carbohydrates as

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between vegetarian, vegan, pescatarian and other dietary groups as well as the emission of ingredients in the diets based on moral, ethical and cultural beliefs.

Factors affecting food choice – Religious, Cultural and Ethical Groups
- Students should know about different dietary lifestyles based upon moral, ethical, cultural beliefs.
- Students should know about food choice linked to the following religions and cultures: Buddhism, Christianity, Hinduism, Islam, Judaism, Rastafarianism & Sikhism
- Students should understand key differences between vegetarian, vegan, pescatarian and other dietary groups as well as the emission of ingredients in the diets based on moral, ethical and cultural beliefs.

Food Practical – Pastry (Filo) Samosa/Spring Roll (alternative Strudel)
- Students should know how to prepare ingredients using a knife (Skill 2/3).
- Students should understand how to prepare fruit/vegetables using the bridge and claw method.

- Shortening and Dextrinisation – Fats uses for coating flour to prevent gluten formation.

Sensory analysis (Fats)
- Students should understand the purpose of sensory analysis.
- Students should be able to complete sensory analysis activities focusing on sensory descriptors.
- Students should know about how taste and smell receptors function in the body.
- Students should know how the taste, texture, smell, appearance of ingredients can be impacted by the inclusion or reduction of ingredients typically fats/sugars.

Bakewell/ Fruit tarts
- General practical skills – weigh and measure (Skill 1)
- Use of the cooker (Skill 4)
- Prepare, combine and shape (Skill 7)
- Sauce making (Skill 8)
- Making a dough (Skill 10)
- Setting mixtures (Skill 12)

Carbohydrates – Thickeners and Faults in recipes (Flour Investigations)
- Students should know how to complete an independent investigation, being able to hypothesise on a given scenario.
- Students should be able to identify different types of

sheet material (aluminium).
- Students should know how to use hacksaws and tinsnips to cut down sheet materials.
- Students should know how to use a file to finish the edges of materials.
- Students should know how to use equipment to accurately measure and mark onto materials.
- Student should know how to correctly set up and use a pillar drill.
- Student should know how to use a pan form to bend metal sheets.
- Students should know use a riveting gun to add pop rivets to join metal materials.

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as applique, dyes and fabric paint.
- Students should know how to apply finishing techniques to textiles and fabrics.

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software to produce an idea for a functional product.
- Students should know how to select the correct CAD tools to generate and present an idea.
- Students should know how to edit and manipulate images to create a suitable idea.
- Student should know how to use tools to accurately draw a design to scale.

D&T CAD Practical – Laser cut picture frame.
- Students should know how to design an accurate model on 2D design.
- Students should know how the design in 2D design is a 2D image that will be manufactured in 3D form.
- Student should know how to efficiently design a product to ensure that material wastage is not caused.
- Students should know how to differentiate colours in lines to create cutting lines, raster engrave lines and etching.
- Students should know how to join acrylic pieces together using a suitable adhesive.
- Students should know how to use a line bending piece of equipment to shape and form thermoplastics.

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well as the main micronutrients (vitamins and minerals) found in a range of ingredients.
- Students should understand the purpose of macro and micronutrients on nutrition and health.
- Students should understand the impact of dietary deficiencies of both micro and macro nutrients.
- Students should know about the energy needs for different people/groups of people and how to cater to their needs (including hydration).

Dietary related diseased
- Students should know about different dietary related diseases typically as a result of nutritional habits.
- Student should understand key contributing factors and prevention methods full diet related diseases such as obesity, diabetes, bone health, dental health.
- Student should know about typical ingredients that can be contributing factors to poor or positive dietary related diseases.

Stew/Chow Mein
- Students should know how to prepare ingredients using a knife (Skill 2/3).
- Use of the cooker (Skill 4)
- Students should understand how to use the cooker

- Students should understand how to use the Hob/Oven when cooking dishes – sauce making (Skill 8).
- Students should understand methods to bind, shape and form ingredients together (Skill 7).

*Using pastry as a standard component (filo pastry sheets) *

Proteins - (HBV/LBV)
- Students should know about the function of protein in the diet.
- Students should know about the differences between high and low biological value proteins, best sources come out and viable alternatives.

Function of eggs
- Know about the function of eggs as an ingredient, its versatility and use in recipes.
- Eggs used for aeration, Coagulation, Setting, Glazing and Binding).

Swiss Roll
- General practical skills – weigh and measure (Skill 1)
- Use of the cooker (Skill 4)
- Prepare, combine and shape (Skill 7)
- Raising agents (Skill 11)

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flour used in bread making and its impact on a dough mixture.
- International cuisine
- Students should be able to identify different types of international cuisine.
- Students should know the differences between the cooking methods, ingredients used, equipment used, eating patterns, and presentation methods of different types of international cuisine.

Choice practical (bolognaise, lasagne, cottage pie)
- Knife Skills (Skill 2)
- Preparing fruits and vegetables (Skill 3)
- Prepare, combine and shape (Skill 7)
- Sauce making (Skill 8) – reduction.
- Use of the cooker (Skill 4)
- Cooking methods (Skill 6)

Food Production
- Students should know that the difference between food that is caught, food that is grown, and food that is reared.
- Students should be able to identify the differences between primary processing of food and secondary processing of food items.
- Students should know about the differences between free range, intensive farming, and organic farming methods.

			D&T CAD Practical – 3D Printing	when preparing dishes (Skill 5)		Environmental Impact
			• Students should know the process for 3D printing with a filament.	• Students should understand how to combine ingredients including spices to make a sauce - reduction method (Skill 8).		• Students should understand the environmental impact of food and food waste upon on the environment.
			• Students should know that 3D printing is an additive process.			• Students should be able to recognise and identify a range of sustainability methods used in the food production industry in order to be more environmentally friendly.
			• Students should know how to design on 3D modelling software such as TinkerCAD.			
			• Students should know how to accurately draw shape and form on TinkerCAD when presenting an idea.			• Students should be able to compare locally sourced and imported food products and the benefits of locally sourced produce both on the environment and in terms of its nutritional value.
			• Student should know how to use the tools and dimensioning equipment to draw 3D objects to size.			
			• Student should know how to share design files ready for 3D printing.			
Procedural *What should they be able to do?*	• Student should be able to describe, analyse and evaluate the sources and origins for materials they are working with.	• Student should be able to describe, analyse and evaluate the sources and origins for materials they are working with.	• Student should be able to describe, analyse and evaluate the sources and origins for materials they are working with.	During the rotation students will complete a number of practical lessons (some may be omitted due to time); crudites and dip, jalousie, angel food cake, pasta and sauce, either lasagne, cottage pie or bolognaise, and international dish and a budget recipe practical.	During these practical's there will be procedural knowledge acquired relating to the application of skills:	During these practical's there will be procedural knowledge acquired relating to the application of skills:
	• Students should be able to explain the moral, ethical and sustainability concerns relating to the material areas they are studying.	• Students should be able to explain the moral, ethical and sustainability concerns relating to the material areas they are studying.	• Students should be able to explain the moral, ethical and sustainability concerns relating to the material areas they are studying.		Food Practical – Pastry (Filo) Samosa/Spring Roll (alternative Strudel)	Bakewell/ Fruit tarts
	• Students should be able to identify a range of materials and their properties, being able to recall them based on their classification.	• Students should be able to identify a range of materials and their properties, being able to recall them based on their classification.	• Students should be able to identify a range of materials and their properties, being able to recall them based on their classification.	During these practical's there will be procedural knowledge acquired relating to the application of skills:	• Students should know how to prepare ingredients using a knife (Skill 2/3).	• General practical skills – weigh and measure (Skill 1)
					• Students should understand how to prepare fruit/vegetables using the bridge and claw method.	• Use of the cooker (Skill 4)
	Specific areas for Metals and Alloys:	**Specific areas for Textiles and Fabrics:**		**Jalousie**		• Prepare, combine and shape (Skill 7)
			Specific areas for CAD/CAM:	• Knife Skills (Skill 2)	• Students should understand how to use the Hob/Oven when cooking dishes – sauce making (Skill 8).	• Sauce making (Skill 8)
			• Students should recognise the impact automation has	• Preparing fruits and vegetables (Skill 3)		• Making a dough (Skill 10)
						• Setting mixtures (Skill 12)
						Choice practical (bolognaise, lasagne, cottage pie)
						• Knife Skills (Skill 2)
						• Preparing fruits and vegetables (Skill 3)

- Be able to identify the differences between a ferrous and non-ferrous metal. - To be able to explain why an alloy is created. - Explain the main extraction process used to extract metals form ores. - Be able to list the stock forms for metals and alloys (sheets, bars, rods). - Be able to explain that most metals can be recycled at the end of their life cycle. **D&T Practical – Metal toolbox** - Students should be able to use tools and equipment safely in the workshop. - Students should be able to identify the correct tools to cut, finish and clean their materials. - Students should be able to use tools and equipment independently to complete tasks. - Student should be able to use tinsnips as a cutting tool to cut down sheet material. - Students should be able to use a file to smoothen the edges of sheet metal. - Student should be able to use a pan form to shape and fold sheet metals for them to be joined and assembled.	- Students should be able to recognise the differences between a natural and a synthetic fibre. - Students should be able to describe common types of fabric and textiles material. - Students should be able to recognise the differences between different types of woven, knitted, bonded and blended fabrics. - Students should be able to describe where fabrics come from, either plant based, animal based or petrochemical based. **D&T Practical – Tote bag** - Students should be able to use tools and equipment safely in the workshop. - Students should be able to identify the correct tools to cut and finish their materials. - Students should be able to use tools and equipment independently to complete tasks. - Student should be able to use fabric shears as a cutting tool to cut down sheet fabric. - Students should be able to use sewing machine to join edges of materials together to create a neat finish on a seam. - Student should be able to use fabric pins to pin fabrics before assembling them.	- had on the careers of manufacturing professionals. - Students should be able to describe the range of CAD and CAM systems and how they are used in industry. - Students should be able to recognise the advantages and disadvantages of using CAD and CAM to work efficiently as well as the opportunities to share work with others, clients or manufacturers. - Student should know the main features of both a laser cutter and a 3D printer and how they create products form CAD designs. - Students should know the health and safety features of both a laser cutter and a 3D printer. - Students should know benefits to CAD CAM equipment in relation to materials waste. **D&T Practical – CAD/CAM projects** - Student should be able to use the drawing and CAD tools and equipment effectively to produce designs that are drawn to scale and accurate ready for printing.	- Prepare, combine and shape (Skill 7) - Use of the cooker (Skill 4) - Cooking methods (Skill 6) **Stew/Chow Mein** - Students should know how to prepare ingredients using a knife (Skill 2/3). - Use of the cooker (Skill 4) - Students should understand how to use the cooker when preparing dishes (Skill 5) - Students should understand how to combine ingredients including spices to make a sauce - reduction method (Skill 8).	- Students should understand methods to bind, shape and form ingredients together (Skill 7). *Using pastry as a standard component (filo pastry sheets) * **Swiss Roll** - General practical skills – weigh and measure (Skill 1) - Use of the cooker (Skill 4) - Prepare, combine and shape (Skill 7) - Raising agents (Skill 11)	- Prepare, combine and shape (Skill 7) - Sauce making (Skill 8) – reduction. - Use of the cooker (Skill 4) - Cooking methods (Skill 6)

	• Students should be able to use a pillar drill independently to create riveting holes. • Students should be able to use a hand drill independently. • Students should be able to use a riveting gun to join edges of metals together. • Students should be able to use tools and equipment to shape and form a handle. • Students should be able to use finishing effects to decorate the surfaces of metal materials.	• Students should be able to use a sewing machine, setting it up correctly, and by knowing how to adjust settings to the required stitch. • Students should be able to mark and correctly create a hem and a seam in fabric. • Students should be able to use fabric shears to cut materials to create an applique effect on the surface of fabrics. • Students should be able to use fabric paints to decorate the surface of textiles if required. • Students should be able to cut away frays or lose threads in fabrics and textiles.	• Students should be able to edit their work to meet the demands of a product. • Students should be able to use tools on CAD software to manipulate shape, forms, text and images as required. • Students should be able to use dimensioning tools. • Students should be able to share files for printing. • Students should recognise the differences between Techsoft 2D design, TinkerCAD and SketchUp for creating CAD designs.			
Disciplinary Literacy *(Tier 3 Vocab)*	Tier 3 Disciplinary literacy linked to the unit of study: • Ore • Extraction • Casting • Stock form • Refinement • Ferrous • Non-ferrous • Alloy • Aluminium • Template • Accuracy • Quality control • Tolerance • Pillar drill • Riveting • Pop Rivets • Ecological	Tier 3 Disciplinary literacy linked to the unit of study: • Fibre • Natural and synthetic • Weaving/woven. • Knitting • Blended • Weft/warp • Selvedge • Pattern • Shears • Pinning • Hems/Seams • Sewing • Bobbin • Allowance • Applique	Tier 3 Disciplinary literacy linked to the unit of study: • CAD, CAM • Laser cutting • 3D Printing • Automation • Ethical considerations • Vector • Raster • Cutting and engraving • Bitmap • Vectorise • Quality checking • Line bending • Epoxy resin • Formers • Dimensions • Accuracy	Tier 3 Disciplinary literacy linked to the unit of study: • Food spoilage • Contaminated • Yeats, Moulds, Bacteria • Enzymes • Enzymic browning. • Micro-organisms • Fats, Protein, Carbohydrates • Vitamins & Minerals • Deficiencies • Nutritional value • Food preparation • Knife cuts; Julienne, Brunoise, Batonnet, Small dice, Baton, Chiffonade • Emulsification • Obesity • Diabetes • Bone health • Dental health • Deficiency • Iron deficiency	Tier 3 Disciplinary literacy linked to the unit of study: • Proteins • HBV – High Biological Value • LBV – Low biological value • Animal sources • Plant sources • Protein alternatives • Deficiency and excess • Kwashiorkor • Time plan • Time management • Method • Quality control • Hygiene and safety • Self-regulation • Raising agents • Eggs • Whisking • Foam • Stable • Chemical properties • Fats	Tier 3 Disciplinary literacy linked to the unit of study: • Gluten • Protein • Gluenin, Gliadin • Hypothesis • Evaluations • Conclusions • Dough • Pasta • 00 flour • Consistency • Reduction • Cuisine • Features • Characteristics • Equipment • Cooking methods • Presentation • Eating patterns • Food production • Primary • Secondary • Tertiary

				Column 5	Column 6	Column 7
				• Sodium deficiency • Sensory Analysis; Taste/smell receptors • Organoleptic qualities • Sensory descriptors • Sensory profiling • Food choice • Moral & Ethical • Vegetarian & Vegan • Plant based. • Halal • Kosher • Demand • User/consumer habits	• Animal fats • Vegetable fats • Hidden fats, Visible fats • Saturated fats, Unsaturated fats • Hydrogenated • Fatty acids • Preparation • Shortening • Environmental impact • Food waste • Food security • Sustainable • 6R's • Red tractor • RSPCA assured. • Fair trade • Locally produced. • Budgeting • Cost effective. • Nutritious • Price per portion • Economic	• Free range • Intensive farming • Processing • Canning • Pasteurisation Suggested list: • Food technologist • Health and safety inspector • Nutritionist • Product/process development scientist • Production manager • Quality manager • Technical brewer • Chef • Procurement manager • Scientific laboratory technician • Toxicologist
Assessment	**Key assessment task:** Students will complete an extended piece of writing based on the environmental impact of extracting metals and ore's form the ground. Students will be expected to include literary writing styles and include key terminology. **Key assessment task:** Students will complete a key assessment which relates to their practical application and working with Metals to help develop their practical skills in this material area further.	**Key assessment task:** Students will have a key assessment piece of work linked to their learning in textiles. This will be to compare and contract the various types of fabrics and textiles based on their characteristics and properties and suitable for use. **Key assessment task:** Students will complete a key assessment which relates to their practical application and working with Textiles and fabrics to help develop their practical skills in this material area further.	**Key assessment task:** Students will complete a key assessment which relates to their design skills both by hand and using CAD to help support their ability to design and communicate in this area of the Design and Technology curriculum. **Key assessment task:** Progress Test - marked and fed back as part of a Key Assessed piece of work. The assessment will be marked out of 50 and developmental approaches used to improve students' knowledge and understanding. Feedback should use a two star and wish model.	**Key assessment task:** Dietary related diseased extended writing task - marked and fed back as part of a Key Assessed piece of work. **Home Learning Task 1: Vitamins and Minerals** Students will use the table below to identify the food sources and main functions for the macro and micronutrients listed. For the micronutrients they should look for examples of both vitamins and minerals. Students should bring this with you next lesson to support their learning. Will support learning in following lesson. **Home Learning Task 2: Inclusive menus and recipes**	**Key assessment task:** Practical Assessment – feedback should be generated using a 2 star and wish method. **Key assessment task:** Time plan - marked and fed back as part of a Key Assessed piece of work. Feedback should use a two star and wish model. **Home Learning Task 3: Food Waste/Local produce** Students will complete a reading activity about locally sourced foods, taken from a food blog, 'Better food; Organic, local, Ethical.' Following this and learning form the lesson students should complete a written response	**Key assessment task:** Progress Test - marked and fed back as part of a Key Assessed piece of work. The assessment will be marked out of 50 and developmental approaches used to improve students' knowledge and understanding. Feedback should use a two star and wish model. **Key assessment task:** Food Production mixed short and extended questions (linked to various food production areas) - marked and fed back as part of a Key Assessed piece of work. **Home Learning Task 5: Food labelling and marketing**

Curriculum Knowledge Map

				Students will be shown a typical recipe for a meal. Using the menu students should consider the needs of the dietary groups to adjust the recipe and justify the choices for the changes they are suggesting. Home learning will support future learning.	question based on the advantages and disadvantages of locally sourced produce and its moral and ethical considerations. **Home Learning Task 4: Home Study Task** In preparation for the end of unit Progress Test students should investigate their key learning topics from this rotation through study activities scaffolded by home learning. Students should investigation (using their books and revision resources).	Students will look at a range of food labels and use research to help them find out what they mean and how they support consumers and companies when packaging food. This will support learning in future lesson.